

REMARKS

By this response, Claims 30 and 36 are amended, and new Claims 44 and 45 are added, leaving Claims 30-45 pending in the application.

Reconsideration, reexamination and allowance are respectfully requested in light of the following remarks.

Personal Interview

Applicants thank Examiners Mendoza and Dawson for the courtesies extended to their undersigned representative during the personal interview conducted on May 5, 2005. Applicants' separate record of the substance of the interview is incorporated in the following remarks.

Rejection Under 35 U.S.C. § 102

Claims 30, 32-36 and 38-43 stand rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,196,219 to Hess et al. ("Hess"). The reasons for the rejection are stated at page 2 of the Official Action. The rejection is respectfully traversed.

Claim 30, as amended, recites an aerosol generator comprising, *inter alia*, "a fluid passage between a first layer and a second layer, the first layer having a surface bonded to a surface of the second layer, and the first layer and the second layer at least partially defining the fluid passage; ... a heater disposed to volatilize the fluid in the fluid passage; and a single outlet disposed to receive the volatilized fluid and direct the volatilized fluid out of the fluid passage" (emphasis added). Support for the amendments to claim 1 is provided, for example, at the paragraph

bridging pages 5-6 of the present specification. Hess does not disclose all of the features recited in Claim 30.

An exemplary embodiment of the claimed aerosol generator 100 is shown in FIG. 1. The aerosol generator 100 comprises a fluid passage 130 between a first layer 110 and a second layer 120. The first layer 110 and the second layer 120 at least partially define the fluid passage 130. A fluid supply 150 is disposed to provide fluid in liquid phase to the fluid passage 130. A heater 180 is disposed to volatilize the fluid in the fluid passage 130. A single outlet 140 is disposed to receive the volatilized fluid and direct the volatilized fluid out of the fluid passage 130.

The Official Action contends that Hess discloses an aerosol generator comprising a "fluid passage" 13, 14, 15 arranged between a "first layer" 8 and a "second layer" 18, and that the first and second layers partially define the fluid passage. The Official Action also contends that Hess discloses a heater arranged to volatilize the fluid in the fluid passage, and an "outlet" 14 arranged to receive the volatilized fluid and direct the volatilized fluid out of the fluid passage. Applicants respectfully disagree with these assertions.

In Hess' liquid spray device 5 shown in FIG. 2, the substrates 8, 18 form an enclosed space 9 (column 5, lines 37-39). Liquid is supplied into the space 9 via the supply tube 7. The spray device 5 also includes cavities 13, which each include at least one output channel 15 in the substrate 18 (column 7, lines 54-57; column 8, lines 10-12). At the outer end of each output channel 15, at least one output nozzle 14 provides an outlet through which the substance 4 can leave the device as a droplet spray (column 7, line 75 – column 8, line 1; column 8, lines 26-28). The spray device 5 includes multiple cavities 13, each including at least one output

channel 15. Each output channel 15 includes at least one output nozzle 14. Thus, the spray device 5 includes multiple outlet nozzles 14. In fact, Hess discloses that “[i]n a practical case, the number of nozzles may vary from around 600 to about 1500” (column 9, lines 60-61).

Hess’ liquid spray device 5 does not include the combination of features recited in Claim 30, including “a single outlet disposed to receive the volatilized fluid and direct the volatilized fluid out of the fluid passage” (emphasis added). In contrast, the spray device 5 includes a large number of outlet nozzles 14. Accordingly, the aerosol generator recited in Claim 30 is patentable over Hess.

Dependent Claims 32-35 are also patentable over Hess for at least the same reasons that Claim 30 is patentable.

Hess also fails to disclose an aerosol generator that includes the combination of features recited in Claim 36. Independent Claim 36, as amended, recites an aerosol generator, which comprises “a first layer and a second layer at least partially defining a fluid passage therebetween, the first layer having a surface bonded to a surface of the second layer, the fluid passage having an inlet at one end and an outlet at a downstream portion of the fluid passage; a fluid supply disposed to provide a fluid in liquid phase to the inlet of the fluid passage; a heater disposed to volatilize fluid in the fluid passage; and a pressure sensor sensitive to pressure drops for actuating the heater via circuitry to volatilize the fluid in the fluid passage; wherein the volatilized fluid exits the fluid passage only at the outlet such that the volatilized fluid forms an aerosol” (emphasis added). Support for the amendments to Claim 36 is provided at page 11, lines 16-31, of the present specification. Hess fails to disclose the aerosol generator recited in Claim 36.

In the aerosol generator recited in Claim 36, the pressure sensor senses pressure drops and actuates the heater via circuitry, and the heater volatilizes fluid in the fluid passage. Volatilized fluid exits the fluid passage at the outlet such that the volatilized fluid forms an aerosol. Hess does not suggest such an aerosol generator.

Hess' spray device 5 includes a vibrating element 10 attached to the bottom substrate 8 for vibrating liquid in the space 9. The liquid is ejected through the output nozzles 14 as a droplet spray (column 7, line 75 – column 8, line 1; column 8, lines 26-28).

Hess discloses that a heating surface can be fitted on substrates 8 and 18 to heat the liquid (column 6, lines 62-64) to control temperature fluctuations of the liquid (column 7, lines 4-6). At column 7, lines 18-22, Hess discloses that:

such heating may contribute at the end of the atomisation cycle to evaporate any minute amount of liquid left in space 9, same as a continuation for a predetermined time of the actuating of the vibrating means after the inhalation cycle has ended. (Emphasis added).

Hess does not disclose that the spray device 5 includes “a pressure sensor sensitive to pressure drops for actuating the heater via circuitry to volatilize the fluid” (emphasis added). In contrast, Hess' vibrating element 10 is operated during the inhalation cycle to cause liquid droplets to be ejected through the output nozzles 14 as a droplet spray.

Accordingly, Claim 36 is patentable over Hess. Dependent Claims 38-43 are also patentable over Hess for at least the same reasons that Claim 36 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

Rejection Under 35 U.S.C. § 103

Claims 31 and 37 stand rejected under 35 U.S.C. § 103(a) over Hess in view of U.S. Patent No. 5,743,251 to Howell et al. ("Howell"). The reasons for the rejection are stated at page 3 of the Official Action. The rejection is respectfully traversed.

The Official Action acknowledges that Hess fails to suggest the subject matter recited in Claims 31 and 37. However, the Official Action contends that Howell cures the deficiencies of Hess with respect to these claims. Applicants submit that the combination of Hess and Howell does not suggest modifying Hess' spray device to result in the aerosol generator recited in Claims 30 and 36. Accordingly, dependent Claims 31 and 37 are also patentable for at least the same reasons that Claims 30 and 36, respectively, are patentable.

Therefore, withdrawal of the rejection is respectfully requested.

Obviousness-Type Double Patenting Rejection

Claims 30-43 have been rejected under the doctrine of obviousness-type double patenting over Claims 1, 5, 6, 8, 14, 16 and 20 of commonly-owned U.S. Patent No. 6,701,921. The reasons for the rejection are stated at page 4 of the Official Action.

In order to overcome this rejection, Applicants have submitted herewith a Terminal Disclaimer in compliance with 37 CFR § 1.321(c), with respect to U.S. Patent No. 6,701,921.

Therefore, withdrawal of the rejection is respectfully requested.

New Claims

Independent Claim 44 recites an aerosol generator comprising, *inter alia*, “a first layer and a second layer; a fluid passage between the first layer and the second layer, the fluid passage having an inlet at one end and an outlet downstream of the inlet end, the fluid passage being defined by opposed flat surfaces of the first layer and the second layer from the inlet to the outlet, the flat surfaces being bonded together;... a heater disposed to volatilize fluid in the fluid passage; wherein the volatilized fluid exits the fluid passage at the outlet and forms an aerosol” (emphasis added). FIG. 1, for example, shows layers 110, 120 having opposed flat surfaces defining the flow passage.

As Hess' spray device does not include all of the features recited in Claim 44, including at least a “fluid passage being defined by opposed flat surfaces of the first layer and the second layer from the inlet to the outlet,” Claim 44 is patentable.

Claim 45 depends from Claim 44 and thus is also patentable.


Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. Should the Examiner have any questions concerning this response, Applicants' undersigned representative can be reached at the telephone number given below.

Respectfully submitted,

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